CLAIMS

What is claimed is:

1. A device (400, 500) comprising: a floating bus (403, 410); a power system for driving the floating bus, the power system comprising a charge pump circuit (419, 408, 414, 420); at least one switch circuit (405, 413) coupled to the floating bus and the power system for facilitating charging of the floating bus; at least one switch control circuit (416, 402, 418) for controlling switching of the at least one switch circuit; and wherein a voltage signal at an input of the at least one switch circuit is floating, and wherein the at least one switch control circuit includes a level shifting circuit (402) for adjusting a control signal level to the at least one switch circuit to facilitate operation of the at least one switch circuit.

2. The device of claim 1, wherein the at least one switch circuit (405, 413) comprises at least one transistor-based switch circuit, and wherein the voltage signal comprises a source input to the at least one transistor-based switch circuit, and the control signal comprises a gate input to the at least one transistor-based switch circuit.

3. The device of claim 2, wherein the at least one switch circuit comprises a first switch circuit (405) and a second switch circuit (413), the first switch circuit comprising at least one P type transistor circuit, and the second switch comprising at least one N type transistor circuit, and wherein the first switch circuit and the second switch circuit comprise complementary circuits.

4. The device of claim 1, wherein the at least one switch control circuit further comprises a level translation circuit (418), the level shifting circuit adjusting an input control signal to the level translation circuit based on a potential of the floating voltage signal.

5. The device of claim 1, wherein the power system comprises a power and data system, and wherein output of the device is across the floating bus and comprises both a floating power output and a floating signal output (517).

6. The device of claim 1, wherein the floating bus comprises a floating DC bus, and wherein the device comprises an integrated circuit employing multiple transistor and diode pairs (405, 404; 413, 412).

7. The device of claim 1, wherein the power system further comprises a reservoir capacitor (420), and wherein the voltage signal comprises a potential across the reservoir capacitor, and the level shifting circuit (402) adjusts the control signal level with reference to the potential at one terminal of the reservoir capacitor.

8. The device of claim 7, further comprising a power on reset protection circuit (401) for monitoring the potential across the reservoir capacitor (420), and if the potential falls below a specified level, then for switching off the at least one switch circuit (405, 413) to inhibit leakage of charge from the reservoir capacitor.

9. The device of claim 1, wherein the floating bus comprises a balanced bus system having a high side bus node (403) and a low side bus node (410), and wherein the at least one switch circuit comprises a first switch circuit (405) and a first diode (404) connected to the high side bus node and a second switch circuit (413) and a second diode (412) connected to the low side bus node.

10. A circuit comprising: a first switch circuit (405) for electrically coupling to a high side bus node (403) of a floating bus, and a second switch circuit (413) for electrically coupling to a low side bus node (410) of the floating bus, wherein the first switch circuit and the second switch circuit comprise complementary circuits for controlling charging of the floating bus by a power system (419, 408, 414, 420), and wherein a first reference signal (CSH+) for the first switch circuit and a second reference signal (CSH-) for the second switch circuit are floating when the first switch circuit and the second switch circuit are ON; and at least one switch control circuit (416, 402, 418) for controlling switching of the first switch circuit and the second switch circuit, the at least one switch control circuit including logic (402, 418) for adjusting a control signal level to the first switch circuit and to the second switch circuit to facilitate operation thereof and provide protection to the first switch circuit and the second switch circuit.

11. The circuit of claim 10, wherein the power system comprises a charge pump circuit (419, 408, 414, 420), the circuit and the charge pump circuit comprising an integrated circuit.

12. The circuit of claim 10, wherein said logic comprises a level shifting circuit (402) for adjusting the control signal level to the first switch circuit and to the second switch circuit relative to the floating of at least one of the first reference signal (CSH+) and the second reference signal (CSH-).

13. The circuit of claim 12, wherein the logic further comprises a level translation circuit (418) coupled to the level shifting circuit, the level translation circuit providing an appropriate logic level control signal to the first switch circuit and to the second switch circuit.

14. A method comprising: (i) providing a first switch circuit (405) for electrical coupling to a high side bus node (403) of a floating bus and a second switch circuit (413) for electrical coupling to a low side bus node (410) of the floating bus, wherein the first switch circuit and the second switch circuit comprise complementary switch circuits for controlling charging of the floating bus by a power system (419, 408, 414, 420); and (ii) providing, when in use, a first reference signal (CSH+) to the first switch circuit and a second reference signal (CSH-) to the second switch circuit, wherein the first reference signal and the second reference signal are both floating when the first switch circuit and the second switch circuit are ON; and (iii) providing a first control signal level to the first switch circuit and a second control signal level to the second switch circuit, wherein the first control signal level and the second control signal level are translated control signals relative to a value of at least one of the floating first reference signal and the floating second reference signal, to facilitate operation of the first switch circuit and the second switch circuit and provide protection thereto.

15. The method of claim 14, wherein the power system comprises a charge pump circuit (419, 408, 414, 420) and wherein the providing (i) comprises providing the first switch circuit and the second switch circuit as an integrated circuit with the charge pump circuit.

16. The method of claim 14, wherein the power system comprises a reservoir capacitor (420), and wherein the first reference signal (CSH+) comprises a potential at a first node of the reservoir capacitor and the second reference signal (CSH-) comprises a second potential at a second node of the reservoir capacitor.

17. The method of claim 14, wherein said providing (i) comprises providing the first switch circuit as a P type transistor (405) and diode (404) circuit and the second switch circuit as an N type transistor (413) and diode (412) circuit, and further comprising electrically coupling the first switch circuit to the high side bus node (403) of the floating bus and the second switch circuit to the low side bus node (410) of the floating bus.

18. A circuit comprising: a first switch circuit (405) for electrically coupling to a high side bus node (403) of a floating bus, and a second switch circuit (413) for electrically coupling to a low side bus node (410) of the floating bus, wherein the first switch circuit and the second switch circuit comprise complementary circuits for controlling charging of the floating bus by a power system (419, 408, 414, 420); means for providing a first reference signal (CSH+) to the first switch circuit and a second reference signal (CSH-) to

the second switch circuit, wherein the first reference signal and the second reference signal are both floating when the first switch circuit and the second switch circuit are ON; and means for providing a first control signal level to the first switch circuit and a second control signal level to the second switch circuit, wherein the first control signal level and the second control signal level are both translated control signals relative to a value of at least one of the floating first reference signal and the floating second reference signal, to facilitate operation of the first switch circuit and the second switch circuit and provide protection thereto.